



Theory, research, and intervention with arsonists[☆]

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ABSTRACT

The literature on arsonists, both young and old, is reviewed. Theory concerning intentional fire-setters, including so-called pyromaniacs, is examined critically. Despite some imaginative attempts to explain arsonists' underlying motives, the existing theories appear limited—so inadequate, perhaps, as to explain the relative lack of theory over the past 20 or 30 years. Empirical work, especially recent typological and classificatory research, is presented and considered. Developmental and demographic factors such as unstable childhood, low socioeconomic status, and marital status have been found to be associated with fire-setting although, when combined with other factors such as alcohol abuse, the picture that emerges is not very different from that of other offender groups. Finally, arson treatments and their outcomes employed are presented briefly. Despite the continuing social cost of arson, there appear to be few well planned, well executed, and highly effective interventions with this problematic offender group. Some suggestions for addressing a number of problematic issues concerning arson theory and treatment are offered.

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Arson, or intentional fire-setting, has a long and ignominious history. It is well-established in the criminal codes of most nations, in part because it is a significant cause of fire worldwide, including deaths and injuries (see [Home Office, 2002](#); [United States Fire Administration, 2001](#)). Throughout the 1990s, for example, arson ranked among the three leading causes of fires in many countries within the developed world ([Davis & Lauber, 1999](#)). Each year in the United States there are 250,000 to 500,000 arson fires accounting for 25% of all U.S. fires ([Geller, 2008](#)), with similar statistics from most other Western countries. According to some British data, roughly 10% of fire-setters are repeat arsonists ([Soothill, Ackerley, & Francis, 2004](#)) and the percentage appears to be increasing. Arsonists, however, remain under-examined

according to a number of prominent investigators (e.g., [Kolko, 1985](#); [Kolko & Kazdin, 1991](#)).

In this review, we will consider the nature of individuals who set fires intentionally, as opposed to accidentally, via brief examination of important theories and research. A historical perspective on arson theory, at least over the past two centuries, is important and illustrates well some of the problems and debates within the area. Consideration of recent research, especially typological inquiries, is important because of limited prior investigation. We will conclude with a brief consideration of a variety of psychosocial and pharmacological interventions that have been employed with deliberate fire-setters. In contrast to a number of reviews (e.g., [Barker, 1994](#); [Barnett & Spitzer, 1994](#); [Geller, 1992](#)), we will not focus on the assessment and treatment of mentally-disordered arsonists but we will consider this select group when relevant. We will also avoid exclusive concern with juvenile offenders (e.g., [Hardisty & Gayton, 2002](#); [Kolko, 1985](#)), although the arson offense rates of teens and pre-teens demand significant consideration of this group ([Schwartzman, Stambaugh, & Kimball, 1998](#)). We will attempt to provide useful suggestions to increase and to improve work in this important area.

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1. Attempts to account for arson

Arsonists have been regarded traditionally as very dangerous criminal offenders (Scott, 1974). This may be due to the susceptibility of many pre-20th century places, both urban and rural, to significant loss of resources and life due to fire. When apprehended, deliberate fire-setters have been dealt with severely, often executed, including burning in some European cases (Davis & Lauber, 1999). The situation in Western Europe and North America, however, began to change during the late 18th and the early 19th C. Although many arsonists still faced severe punishments on conviction, some were spared due to the perception of diminished capacity based on various psychiatric and psychological factors (see Brigham, 1849; Esquirol, 1965; Prichard, 1842; Ray, 1962).

Marc (1833) was the first to label repetitive and “bizarre” (i.e., not stemming from common motives such as revenge) fire-setting “pyromania”. He saw pyromania, a variant of monomania, as a form of psychopathology characterized by a distinctive urge to burn. Both Marc and Esquirol, 1965 agreed that most pyromaniacs are young girls going through puberty although the reasons behind the urge to burn remained largely unknown. James Prichard (1842) described pyromania, or incendiary monomania, as “the insane impulse to burn...{and a} form of instinctive madness” (p. 142). For Prichard (1842), who can be seen as the foremost British psychiatric nosologist of the early 19th C, two conditions had to be met for a diagnosis of pyromania. It had to be the case “not only that the perpetrator was under the influence of a morbid propensity, but that the propensity was irresistible and beyond the power of control” (p. 149). Prichard noted that few arsonists were diagnosable as pyromaniacs.

According to Geller, Erlen, and Pinkus (1986), the first American to address the question of pyromania seriously and systematically was Isaac Ray. Ray (1962) described pyromania as a partial moral mania, where “derangement is confined to one or a few of the affective faculties” (p. 139). He noted that pyromania “has been so frequently observed, that it is now generally recognized as a distinct form of insanity” (p. 145). For Ray, those suffering from such insanity should not be held responsible for their actions involving incendiarism. Interestingly, Ray seemed quite convinced by the cases and opinions of Franz Josef Gall, the founder of the school that became known as phrenology, despite Gall's (1835) belief that all murderers and arsonists shared similar mental faculties and deserved the same fate (i.e., execution which was the usual sentence in Austria and the German states during the early part of the 19th century). Gall (1835) wrote that it “is probable that the pleasure experienced by certain people in firing buildings is but a simple modification of the disposition to murder” (pp. 103–104). Throughout the 1800s, controversy swirled around the view of pyromania as a mental disorder, and a finding of not criminally responsible for some individuals charged with deliberate fire-setting, with a number of psychiatrists and psychologists supportive of the position that diminished capability accounted for at least some cases of arson. Others, however, opposed this view and regarded all arsonists as mere criminal offenders (for more details, see Geller et al., 1986).

By the beginning of the 20th century, pyromania seemed to be well established as a mental disorder despite an unknown etiology. Kraepelin (1907), the prominent German psychiatric nosologist, defined pyromania as impulsive insanity caused by an irresistible impulse to set fires while acknowledging that the specific root of the impulse is far from clear. Stekel (1943) was among the first to provide more precise and distinctly psychoanalytic interpretations of pyromania. Stekel (1943) described pyromania as a type of paraphilia caused by impeded or unfulfilled sexual tension. For Stekel (1943), there were three distinct sexual motives behind pyromania: first, sexual sadism, where the pyromaniac enjoys the pain experienced by humans and animals in the conflagration and typically masturbates at the scene; second, arson committed during an enforced abstinence

from masturbation; and, finally, arson that is “intended to free the masturbator of the habit” (p. 159). This view of pyromania as rooted in sexual disorder gained widespread acceptance over the next decade or two, especially after Freud's (1932) elaboration of this position. Freud explained that humans, or at least men, had a primitive impulse to put out fire with their urine. Using the myth of Prometheus, Freud hypothesized a homosexual conflict through the desire of men to extinguish fire with their own urine. A connection exists for Freud between the power of a fire hose and the male penis. When Prometheus gave humans fire, according to Freud (1932), we were prohibited of the pleasure to extinguish it. Freud saw fire as symbolic of lust. Fire-setting was a sexual, specifically homoerotic, symbolic act. These ideas were developed later by Freud (1934), who speculated that, once man had fire, he gave women the responsibility of guarding it because their female anatomy prevented them from extinguishing it by urination. Freud theorized that repression occurs when a man desires an act like fire-setting but understands, at least at some level, that the act is wrong. Thus, when the motive for arson is unclear, it may be a direct result of repressing sexual urges to set fires. Freud (1932) pointed to some arsonists' claims that their only motive was satisfaction from watching the fire burn as support for his interpretations.

A neo-Freudian perspective was advocated more recently by Morneau and Rockwell (1980) who provided an alternative interpretation of bizarre cases of arson from Stekel and Freud. They argued that pyromaniacs receive direct sexual excitement from fires due to a strong connection between fire and water, a relationship that begins in childhood with what Abrahamsen (1960) and others described as urethral eroticism or the urethra-erotic character trait. Advocates of psychoanalytic theory, both Freudians and neo-Freudians, have argued that the act of fire-setting is a possible substitute for masturbation or an individual's only means of achieving sexual arousal (e.g., Fras, 1997; Kaufman, Heins, & Reiser, 1961). They claim evidence in the form of some anecdotal data such as reports of masturbation and orgasm during and after the act of fire-setting (e.g., Awad & Harrison, 1976; Laberge, 1974). Lewis and Yarnell (1951) also reported a link between enuresis and fire-setting. They hypothesized that individuals who cannot control their bladder would seek some type of control, thus connecting setting fires with possessing the power to extinguish them. They studied a group of 1145 arson case summaries from the National Board of Fire Underwriters. Of these cases, 8% (91) were identified to be acting in some form of sexual motive. Kaufman et al. (1961) interviewed 30 adolescent fire-setting males who all had histories of emotional disturbance. Over half of the sample was enuretic and three quarters of the youths exhibited behaviors that the authors interpreted as uncontrollable instinctive drives such as rage, hyperactivity, mutual masturbation and fellatio, exhibiting their genitals, and looking under women's skirts. Kaufman et al. concluded that these individuals exhibited oral fixation associated with disturbances of their libidinal and aggressive drives. While subsequent research has reported evidence of sexual dysfunction among some arsonists (e.g., Hurley & Monahan, 1969; Lange & Kirsch, 1989), Rice and Harris (1991) found only 6 individuals who derived sexual pleasure from fire-setting in a study of 243 male fire starters. They noted that there are other explanations for such behavior, and we will consider some of these presently.

One obvious difficulty with the psychoanalytic account of arson and pyromania, so widespread that it has led to the emergence of such terms as pyrophilia and pyrolagnia (see Peck, 2006; Sanchez, 2006), is that it assumes only males have the sexual motive to start fires. As noted, however, there have been accounts of females, including some recent ones (e.g., Balachandra & Swaminath, 2002; Coid, Wilkins, & Coid, 1999), who start fires for sexual gratification. Female fire-setters, although apparently rare since the early 20th C, have been reported to start a fire, watch it burn and return home to masturbate. This

limitation, which we would suggest is rooted in the general failure of psychoanalytic theory to account for the psychosexual functioning of women whether normal or abnormal, has led other theorists and researchers to consider the link between sexual arousal and fire from alternative perspectives if not discard such a factor entirely.

Quinsey, Chaplin, and Upfold (1989) compared the sexual arousal of fire-setters and non-fire-setters via narrated audiotapes describing fires, sexual incidents, and non-sexual incidents. They found no difference in the level of sexual arousal between the two groups. Other researchers, too, report no difference in sexual arousal patterns as measured by penile plethysmography or self-reported sexual maladjustment to fire-setting (e.g., Bradford, 1982; Hill et al., 1982). Peck (2006), however, noted a major flaw in the methods used in the research to date in that researchers simply read or employ pre-recorded narratives describing scenes involving fire-setting. This procedure, for Peck, eliminates possible significant factors such as committing the act, meaningful responsibility for the destruction it creates, and being close to the heat of the blaze. While a direct causal relationship may not exist, this does not discount some type of relationship. Gaynor and Hatcher (1987) argued that fire-setting may be a pathological behavior related to sexual conflict although not a direct result of sexual conflict. Along the same lines, at least with respect to a sizeable minority of female arsonists, Coid et al. (1999) reported an association between fire-setting and self-mutilation.

Learning theorists have argued that fire-setting is much needed expressional outlet for their negative emotions and sexual frustrations (McKerracher & Dacre, 1966). Advocates of various learning perspectives (e.g., Gaynor & Hatcher, 1987) have suggested that some individuals are uncomfortable with expressing their emotions and, requiring a means of expression to relieve their emotional distress, they act out on occasion. This may be due to the individual being socially and/or interpersonally inept. The onset of repeat, pathological fire-setting during adolescence, a time of sexual experience and identity growth, seems consistent with such a position. Individuals who never learn direct and healthy behaviors to express or to relieve their sexual and emotional tensions may turn to indirect and unhealthy behaviors like fire-setting. Fire-setting, therefore, can be seen as a learned behavior to gain control and relieve sexual tension but only for a very few of those who set fires deliberately.

A typology of fire-setters by Lewis and Yarnell (1951) described various situational characteristics suited to learning theories. In an empirical examination of their typology, mentally-disordered arsonists commonly had a history of psychosis in the family, displayed abnormal sexual behavior, had borderline intelligence and came from disrupted families. Thus, it is likely these individuals lacked the environment necessary for proper sexual development and expression. Lewis (1965) argued that fire had magical power insofar as some individuals come to believe that they can use it to exert control and display power. Through arson, socially inept individuals gain control over normal feelings of impotence, shame, and failure, providing pleasure for the ego of the offender. Fire-setting occurs when feelings reach an unacceptable intensity and some form of behavioral expression is necessary. Advocates (see Sanchez, 2006) argue that this theory is easily applicable to adult fire-setters who are unable to act appropriately on the sexual and aggressive impulses they are trying to manage. These individuals apparently act out in general against inanimate objects, or fetish objects, rather than people because of their intense social defects (Wolford, 1980). Reinhardt (1957) described sexually motivated arsonists as excitement offenders in that they receive pleasure in the power and control provided by the destruction of the fire while lacking inhibition from the possible negative consequences of the act. Kirk (1969) suggested these consequences are not seen by the offender, which is likely in a learning-disabled individual. For Lande (1980), individuals can develop over time a repeated associate between fire, arousal, and sexual excitement until they have a fire fetish, or sexual arousal

predominantly or exclusively the result of viewing and/or setting fires.

Developmental research on the impact of family and environmental factors provide a foundation for many learning accounts (e.g., Caspi, 2000; Nakao et al., 2000). Children who grow up in a dysfunctional home, are sexually abused, or are poorly educated never learn the proper outlets to express their sexual tension or arousal. Similar to aggression, individuals turn to deviant solutions such as fire-setting. Arson, then, becomes a learned behavior to address problems related to domains involving sex and aggression.

Extending beyond sexual conflict theories, dynamic-behavioral theory takes into account the societal, environmental, and personality characteristics that lead to fire starting behavior (Fineman, 1980). Advocates of dynamic-behavioral theory place more emphasis on non-emotional factors such as family history, school functioning, previously enacted behaviors, and organic and physical problems that provoke fire-setting. This theory emphasizes environmental factors that lead children to play with fire, including modeling, imitation, and inconsistent parenting. Stress, peer pressure, and emotional distress are also factors that can produce arson-related behavior. This theory is largely used to fill the perceived gap between psychodynamic and learning theories. While such an account might include emotional elements relevant to fire-setting, it falls short on describing how an individual turns to fire-setting behavior initially, and it ignores all the children exposed to less-than-ideal early experiences who do not engage in arson. Why do only certain children, adolescents, or adults turn to fire-setting to cope with emotional distress caused by oppressive or dysfunctional social environments?

Dynamic-behavioral theory has been examined indirectly via typological studies. Researchers who examine characteristics of repeat fire-setters have reported some common features, including low socioeconomic background, less than average intelligence, familial disruption, poor social skills, lack of remorse, and a history of juvenile offending. Such factors are key determinants of serious fire-setting problems according to dynamic-behavioral theorists. Admittedly, however, there is little direct evidence to establish the fit of this theory; indeed, while learning approaches may be very plausible, few data are available for support. In their favor, learning-based theories, in particular social learning theories, may well account for the relatively few mentally disordered or “bizarre” arsonists, but they may well account for the majority of arsonists who choose fire for purposes of gain or retribution.

It could be argued that there is an emerging neurobiological theory of arson, at least compulsive arsonists (see Barnett & Spitzer, 1994; Dell'Osso, Altamura, Allen, Marazziti, & Hollander, 2006; Grant, 2006). If one can speak of such a theory, however, it is only as a nascent one, and one that has many variations as researchers argue backwards from successful biomedical interventions involving very select patient groups. Indeed, part of the problem with theories about arsonists is that they appear to have been abandoned over the past two to three decades in favor of empirical investigation. Since research without theory is blind, this is a rather distressing development, and some of the implications of this trend will be discussed in the final section of our review.

2. Research and classification involving arson and pyromania

Arson, as noted, is not well understood, and it has not been examined empirically in any serious and systematic fashion until recent years. The lack of empirical attention may be due to problems such as experimental design complications, biased sampling, unreliable subjects, and reporting errors (Davis & Lauber, 1999). Despite research limitations, data gathered over the past 20 to 30 years have increased our knowledge with respect to the nature of fire-setting behavior. This research has led to the development of several arson-related classification systems.

To develop a better understanding of arson and especially mentally disordered arsonists, several researchers have examined arsonists within state psychiatric hospitals or similar institutions. Geller and colleagues (see Geller & Bertsch, 1985; Geller, Fisher, & Moynihan, 1992), for example, found that 26–30% of the general psychiatric patients in their study had engaged in some type of fire-setting behavior during their lifetime. Examining the prevalence of repeated fire-setting behavior, several studies have discovered that approximately 30–36% of individuals have histories of multiple fire-setting (Geller & Bertsch, 1985; Geller, Fisher, & Bertsch, 1992; Hurley & Monahan, 1969; Koson & Dvoskin, 1982; Molnar, Keitner, & Harwood, 1984). These rather high numbers, however, may include a large number of chronic or long-term psychiatric patients who engage in multiple minor incidents, such as small trash can fires, in desperate bids to attract more serious therapeutic attention in backyards where medical rounds can consist solely of dispensing or altering medications. Whether such individuals should be considered as comparable to arsonists who fire non-institutional settings is debatable.

A number of researchers have attempted to identify the common characteristics of arsonists. While a definitive profile of a typical arsonist may not exist, and indeed may not be possible, research has revealed certain common features among those who engage in deliberate fire-setting. These features tend to include age (mean age mid to late 20s, although mean age may be misleading here), male, single, White (Barker, 1994; Bradford & Dimock, 1986; Davis & Lauber, 1999; Inciardi, 1970; Lewis, 1965; Lewis & Yarnell, 1951; Rice & Harris, 1991; Rix, 1994), low socioeconomic background, less than average intelligence, poor social skills, unstable childhood (Bennett & Hess, 1984; Bradford & Dimock, 1986; O'Sullivan & Kelleher, 1987; Räsänen, Hakko, & Väisänen, 1995; Yesavage, Benezech, Ceccaldi, Bourgeois, & Addad, 1983), alcohol abuse (O'Sullivan & Kelleher, 1987; Puri, Baxter, & Cordess, 1995; Räsänen et al., 1995; Repo, Virkkunen, Rawlings, & Linnoila, 1997), and a history of juvenile offending (Harris & Rice, 1996; Vreeland & Levin, 1980). Becker, Stuewig, Herrera, and McCloskey (2004) conducted a 10-year prospective study involving children and familial factors involved in the development of delinquency, and they found that both childhood fire-setting and animal cruelty were related to subsequent offending through the DSM diagnosis of conduct disorder (American Psychiatric Association, 2000). The list of demographic and psychosocial factors listed above certainly does not distinguish arsonists from many other types of offenders. Based on their research with "pathological arsonists", for example, Jackson, Hope, and Glass (1987) have wondered why fire-setters are distinguished from other violent offenders. The only significant difference that they discovered was that arsonists tend to be taken into care or custody at an earlier age than violent offenders.

In an attempt to comprehend deliberate fire-setting behavior, it is often presumed by law enforcement and the lay public that the individual must be mentally ill in some manner (Davis & Lauber, 1999). Generally, however, this is not the case. Considering all individuals arrested for arson, roughly 10% are considered to have significant psychological impairment, and only 2% of individuals charged with arson receive a not-criminally-responsible disposition each year (Barker, 1994). Even with these relatively low percentages, however, arson appears to have an association with mental disorder. In terms of co-morbidity, psychopathological fire-setting has been linked to affective disorders like depression (Dell'Osso et al., 2006), thought disorders like schizophrenia (Anwar, Langstrom, Grann, & Fazel, 2009), personality disorders such as anti-social personality disorder see (Lowenstein, 2003), among others. Shaw (1992) even reported a case of an adolescent fire-setter in a dissociative state although this seems to be an isolated report.

If we can set aside the problem of circular reasoning, at least temporarily, pyromania is one expression of pathological fire-setting. As

a mental disorder, it is described in the Impulse-Control Disorders (Not Elsewhere Classified) section of DSM-IV-TR (American Psychiatric Association, 2000). Behavioral criteria for pyromania include a recurrent failure to resist impulses to set fires; an elevated level of tension or affective arousal before the act; an intense pleasure, gratification, or relief after setting or witnessing a fire; and a lack of motivation, such as monetary gain, for setting fires. Data from research examining prevalence of pyromania are strikingly inconsistent. Some studies (e.g., Crossley & Guzman, 1985) report rates of roughly 3% which is higher than the rate estimated by the American Psychiatric Association (American Psychiatric Association, 2000). Grant and colleagues (Grant, Levine, Kim, & Potenza, 2005; Grant, Williams, & Potenza, 2007) have examined pyromania prevalence among psychiatric patients and have found rates as high as 7%. They have concluded that "impulse control disorders appear common in inpatients with other psychiatric disorders" (Grant et al., 2005, p. 2187). Results suggest that pyromania, at least as defined by DSM-IV criteria, is either relatively rare or relatively common, but sampling issues likely complicate any conclusion. It is also possible that individuals are frequently misdiagnosed, perhaps seriously and systematically depending on diagnostic training or experience. Distinction could be made between psychologically impaired individuals who set fires for gratification, and those who set fires for idiosyncratic reasons. In some cases, this gratification may involve sexual arousal, and this sexual arousal may lead to urination, erection, masturbation and/or spontaneous orgasm (Sanchez, 2006), but the gratification may be of a broader, more diffuse nature. At best, sexually-motivated arsonists appear to comprise only a small percentage of the arsonist population but, again, the exact percentage is unclear.

The earliest attempts to classify arsonists were based on the assumption that arsonists either did, or did not, have a mental disorder (Doley, 2003b). Employing this lens, Lewis and Yarnell (1951) conducted a detailed study of arsonists. They proposed five categories of arsonists who set fires due to diminished mental capacity. These categories included accidental or unintentional, delusional, erotically motivated, revenge motivated, and children who light fires. Similarly, several other studies have developed classification systems based on biomedical and behavioral considerations (e.g., Barnett & Spitzer, 1994; Geller, 1992; Harris & Rice, 1996; Koson & Dvoskin, 1982; Rix, 1994). Over time, however, studies classifying arsonists not only included such concerns but attempted to infer motivation.

The second major stage in classifying arsonists was based almost exclusively on motivation, with several researchers developing various major motivational categories. These categories include: revenge, excitement (including sexual), profit, vandalism, crime concealment, and extremist (e.g., Barker, 1994; Douglas, Burgess, Burgess, & Ressler, 1992; Edmunds, 1978; Icove & Estep, 1987; Inciardi, 1970; Prins, 1994; Rider, 1980; Rix, 1994). Since then, the majority of studies have proposed similarly extensive classification systems, with categories such as cry for help, vagrancy, heroism, and unknown reasons added by some researchers (e.g., Davis & Lauber, 1999; Prins, Tennent, & Trick, 1985). Research has shown that revenge or anger, directed at a person or at society in general, is the most common motive for arson, accounting for as much as 40% in some cases (Davis & Lauber, 1999; Davis & Miton, 1997; Inciardi, 1970; O'Connor, 1987; O'Sullivan & Kelleher, 1987; Pascoe, 1983; Pisani, 1982; Prins, 1978, 1986; Quinsey et al., 1989; Rice & Harris, 1991; Stewart, 1993). In other words, arson is often an expressive act directed at another person or people.

Classification systems based on motives, however, are problematic due to the difficulties in identifying an accurate and/or single reason for fire-setting behavior. Frequent arson is often undertaken with more than one motive in mind or with no motive in mind at all (Bradford, 1982; Canter, 2000; Davis & Lauber, 1999; Fineman, 1995;

Icove & Estep, 1987; O'Sullivan & Kelleher, 1987; Prins, 1986; Rider, 1980; Wood, 2000). Motives are also generally reported in retrospect, and they may be ambiguous (Häkkinen, Puolakka, & Santtila, 2004). Due to limitations in motive-based classifications, the early 1990s saw a radically different alternative to classifying arsonists.

Recent research has focused on behavior as a means of classifying arsonists. Douglas et al. (1992), for example, proposed a typology based primarily along an organized–disorganized dimension. The organized arsonist was said to use elaborate incendiary devices, a methodical approach to setting the fire, and leaves little evidence at the scene. The disorganized arsonist, in contrast, tended to use materials found at the scene, common ignition devices, and often left physical evidence at the scene. In order to differentiate arsonists further, however, motive became a defining feature in Douglas et al. (1992) study, involving six main motivation categories of revenge, excitement, profit, vandalism, crime concealment, and extremism. Unfortunately, this classification system was based on anecdotal information gathered from crime scene information, and lack of theoretical grounding was highlighted as a significant weakness in their approach (Canter & Heritage, 1990). This weakness prompted a study by Kocsis, Irwin, and Hayes (1998), which was able to replicate findings along the organized–disorganized dimension. This research, however, also demonstrated that a simple organized–disorganized dimension was not adequate at classifying arsonists when applied to a full spectrum of possible arson behaviors and motives.

Canter and Fritzon (1998) developed a model that attempts to differentiate arson behaviors based purely on behavioral indicators rather than inferred motives. Canter and colleagues described four major behavioral themes following an instrumentality–expressiveness dimension. The first theme, instrumental person, is found in conflicts between arsonist and victim. The second theme, instrumental object, is an opportunistic style of offense and has no coherent purpose. The third theme, expressive person, is reminiscent of heroic or attention-seeking motivation. The final theme, expressive object, is distinguished by arson committed to achieve some form of emotional relief. While this classification system is similar to other arson taxonomies (e.g., Barker, 1994; Edmunds, 1978; Faulk, 1988; Häkkinen et al., 2004; Leong & Silva, 1999), this model is unique in terms of the statistical support for relationships between crime scene behaviors and personal offender characteristics (Almond, Duggan, Shine, & Canter, 2005; Fritzon, Canter, & Wilton, 2001).

In an attempt to classify serial arsonists, Kocsis (2004, 2006) proposed a model, based on earlier empirical attempts to profile repeat fire-setters (e.g., Kocsis & Cooksey, 2002; Kocsis et al., 1998) containing four discrete behavioral patterns that link serial arson behavior with probable offender characteristics. The first pattern, anger, shares some similarities with the revenge motivated arsonist (Douglas et al., 1992) and the instrumental person (Canter & Fritzon, 1998) in that the fire-setting is directed at a person. The second pattern is the thrill cluster, which states that individuals set multiple fires for excitement or satisfaction. Thus, the thrill pattern holds some similarities to the broad excitement category proposed by Douglas et al. (1992). The third pattern, resentment, is classified by a generalized sentiment on a vague class of target. Due to the unfocused nature of attacks, the resentment pattern is similar to previous categorizations such as vandalism motivated arson (Douglas et al., 1992) and the instrumental object arsonist (Canter & Fritzon, 1998). The final cluster is labeled the sexual pattern and is characterized by the ignition of fires for sexual arousal or gratification. This cluster shares clear similarities with paraphilic classifications (American Psychiatric Association, 2000), the excitement motive (Douglas et al., 1992), and the expressive object offense (Canter & Fritzon, 1998). Thus, while each researcher develops his/her own classification system, each system is based on the same categorizing principles.

To summarize, efforts to classify arson range from approaches including only inferred motives, to approaches based primarily on

motive, and finally to approaches that focus on behaviors associated with the offense. The classification systems offered to date vary from simple dichotomies to more complex taxonomies. On the basis of these classification systems, arson treatment programs could be targeted more effectively, although it would be a stretch to suggest that any particular system has been employed extensively in treatment efforts to date. We would note the obvious here that, while research on arsonists' characteristics may be useful to the general development of treatment programs and risk assessment, this work adds relatively little to understanding the underlying causes of arson and, hence, it is unlikely to inform development of specific treatments in any significant manner. Theory-based studies into more dynamic factors are important.

3. Psychological and psychiatric treatments for arsonists

As noted by Palmer, Caulfield, and Hollin (2007) in their review of psychosocial treatment approaches used with young fire-setters in the United Kingdom, a variety of psychotherapeutic and behavioral treatments have been used with child and adolescent arsonists to date beyond mere educational or psycho-educational approaches. Much the same is true of interventions with adults, too, although the majority of treatment efforts have been aimed at young offenders rather than adults (Sanchez, 2006). Treatment programs for both adolescent and adult arsonists, especially those deemed mentally disordered, include approaches such as strict behavioral techniques, emotional–behavioral therapy, cognitive–behavioral therapy, family psychotherapy, psychoanalytic therapy, and pharmacotherapy. Treatments for pre-teens have tended to focus on intensive individual psychotherapy from various perspectives, behavior therapy, and family therapy. We will attempt to describe only a selection of these interventions.

A number of learning techniques have been used with arsonists, especially children (for an overview, see Hardisty & Gayton, 2002). Wolff (1984) used satiation with a 7-year-old male offender, permitting him to light as many matches as he wished under supervision, and he found a decline in behaviors associated with fire-setting over a two-year period. In a single-case experiment with a 20 year-old male with a well-developed fire fetish, Lande (1980) employed both orgasmic reconditioning and covert satiation to effect. Other learning techniques include pro-social and assertiveness skills training (Harris & Rice, 1984; Rice & Chaplin, 1979), as well as contingency management (Kolko, 1985). Treatment has generally targeted individual self-control, problem-solving skills, and relaxation. Reduced fire-setting has been found with these interventions although, as noted by Kolko (1985, 2001), outcome studies often lack controls and long-term follow-ups.

The goal of emotional–behavioral therapy is to enable the individual to gain control over their fire-setting behavior (Gaynor & Hatcher, 1987). This can be accomplished using a graphing technique that brings awareness to the events and feelings associated with fire-setting. Once the events and feelings are discovered, individuals become able to interrupt the behavior before it starts. Individuals then substitute appropriate types of behaviors, learned throughout therapy, to express their emotions. This therapy is commonly used by advocates of social learning theory who argue individuals set fires because they do not know how to properly express their negative emotions. By learning socially acceptable responses and behaviors, individuals can easily express their emotions before letting them escalate to destructive behaviors. The cognitive–emotional approach in outpatient treatment stops fire-setting behaviors and adjusts aspects of individual characteristics and environmental conditions.

Another treatment approach used to alter fire-setting behavior is cognitive–behavioral therapy. Kolko (2001) reported success using cognitive–behavioral treatment with young offenders, where modeling and role-playing targeted such outcomes as cognitive and affective

antecedents of fire-setting as well as lack of assertiveness and conflict coping skills. Often cognitive-behavioral interventions, both individual and group, are used with adult arsonists. In one example using a group approach with both male and female arsonists having mild developmental impairments, Taylor, Thorne, Robertson, and Avery (2002) targeted variables such as anger, self-esteem, and positive attitudes toward fire-setting. Post-testing found decreases in anger and pro-fire attitudes, and increases in self-esteem. Despite methodological limitations, such as lack of control and no post-release follow-up, they concluded that the results provided encouragement for intervention with a varied and difficult client group. Additional research, clearly, needs to examine the overall effectiveness of cognitive-behavioral treatment in controlled clinical trials, but Taylor et al. (2002) provide some reason for optimism.

Hall, Clayton, and Johnson (2005), too, presented a rather interesting approach to treating arsonists with intellectual deficits. They used two similar yet different techniques, one in an individual format and the second in group psychotherapy. The technique that they used individually with their incarcerated arsonists was cognitive analytic therapy (Ryle, 1993), a therapy based on both Kelly's (1955) personal construct theory and psychoanalysis. The concern of cognitive analytic therapy is to address the problems related to arson, as seen through the client's eyes, and to assist in identifying and overcoming cognitive "traps, dilemmas, and snags". Following several sessions of individual therapy, they had clients join a cognitive-behavioral therapy group. Although their pre-post measures were rather weak (e.g., global self-esteem measure and self-rating of "fire interest") and they did not report a long-term follow-up, they did report short-term benefits. If for no other reason, their innovation deserves commendation.

Family therapy has been employed with young arsonists, although it has little relevance for adult fire-setters who live independently. The foundation for family therapy with arsonists is that fire-setting reflects a more generalized disturbance in the family, and treatment focuses on correcting the maladaptive relationships in the family that produced the arson. Eisler (1972) reported an interesting application of a crisis-oriented family intervention involving a teen-aged arsonist. Although the long-term outcome in terms of the teen's fire-setting was unclear following several weeks of intensive intervention targeting the family's interaction and communication patterns, Eisler reported that treatment resulted in more open familial communication, less tension at home, and "a livelier range of affect" (p. 78) among family members. Overall, the impact of family therapies is unknown however reasonable and promising their approaches may be.

Bumpass, Fagelman, and Brix (1983) made a determined attempt to link negative affect to fire-setting in children, and also to provide therapy based on their individual findings. Using a sample of 29 children aged 5 to 14 years, they assessed feelings and behaviors using a graphing procedure that linked affect and conation. Individual therapy involved the development of coping behavior, including contact with the therapist in the face of an overwhelming desire to light a fire, tied to negative feelings and stressors. Following an average two year follow-up, only two failures were noted. Unfortunately, the authors concluded their data show that "firesetting represents aggression directed toward a frustrating parent or a rival for parental love" (p. 343). Given that most parents can be frustrating frequently for their children, and there are always rivals for parental love and attention, it seems highly unlikely that all child arson can be reduced to such family dynamics. If this were the case, most families would be living in burnt out shells of houses or apartments.

If fire-setting is associated with repressed sexual desires, even if only for limited numbers, long-term psychodynamic therapies could be successful. Sanchez (2006) recommended starting treatment with psycho-educational classes to teach fire safety and appropriate uses for fire, as well as the legal consequences of fire-setting behaviors. A

victim offender rehabilitation program is also recommended so that the offender can learn and understand the impact of the crime on victims and their families. Sanchez (2006) suggested following preliminary work with intensive individual psychotherapy to examine the root of fire-setting behavior, which would be followed by group psychotherapy where individuals can have a place to share their feelings in an environment where they will not be judged. It must be noted again that, while psychoanalytic therapy might be effective as demonstrated in future single-case experiments and controlled clinical trials, the range of application would be limited to a very few arson offenders.

Pharmacotherapy has been employed in psychiatric or medical settings although it is used most commonly in combination with other treatments such as psychotherapy or behavior therapy. Impulsive and aggressive acts, such as fire-setting, have been linked to dysfunctional neurotransmission involving serotonin. Schmitz (2005) argued that low levels of serotonin prevent the inhibitory influences on the mesocorticolimbic pathways. Without adequate inhibitory control, individuals are more inclined to act out impulsive aggressive behavior. Without inhibition from serotonin, dopaminergic and opioid reward transmission reinforces aggressive behaviors such as fire-setting. Through the use of selective serotonin reuptake inhibitors, these reward pathways can be inhibited and reduce aggressive behavior. Topiramate has been beneficial in treating "behavioral addictions" such as pyromania because of its hypothesized mechanism of modulating mesocorticolimbic dopamine function (Grant, 2006). Clomipramine hydrochloride, often used to treat depression and obsessive behavior, has also been used successfully according to Peck (2006), who found that the medication reduced a patient's thoughts about fire by roughly 75%.

Overall, the psychosocial, behavioral, and psychiatric treatments available for adult and juvenile arsonists are broad and promising. No doubt, however, even more imagination and daring is required in future treatment efforts. At this point in time, we know little about short-term and long-term effectiveness and efficacies. As Dell'Osso et al. (2006) noted in their biomedical review of impulse control disorder, there has not been a single controlled clinical trial of any pharmacotherapy used with compulsive fire-setters. When we add complex combinations of therapeutic approaches, such as the 16-month program incorporating a number of individual and group therapy components described by Swaffer, Haggert, and Oxley (2001), the outcomes with fire-setting clients are far from clear. More evaluative research is essential.

4. Conclusions

Many arsonists appear to be the product of impoverished social environments, with reasonably extensive criminal and anti-social histories dating from an early age, and some personal deficits such as alcohol abuse. Whether the list of characteristics observed to date sets arsonists apart from many other criminal offender groups is questionable, and there are no apparent answers to the obvious question of why some individuals with such backgrounds turn to arson as opposed to another outlet, criminal activity, or life path. The majority of individuals who set fires deliberately do so for reasons related to material gain and retribution. The gain might be specific and monetary, such as an insurance payment, or it might be less tangible, such as destroying evidence of a crime; the retribution might be very targeted, such as material loss or even death of a specific individual, or it could be due to a general grievance, such as a long-standing grudge or bias against a particular social group. Whatever the specific circumstances, such acts of arson tend to be viewed as rational, or at least understandable, and they are not really the focus of much of the work in psychology and psychiatry over the past 200 years. Many of the theories dating back to the early 19th century involve attempts to account for the strange and irrational acts of arson, and it is fair to

conclude that there is no generally accepted theory of psychopathological fire-setting. This is not to imply that theories are not important, quite the opposite. One trend in recent work on arsonists is the decline of theory. This may be reflective of a deficiency in much psychological research of the past quarter century but, regardless, it appears to be problematic. Theory is not only an aid to effective assessment and intervention, but a key requirement to a better understanding of any phenomenon. Increasingly complex taxonomies of arsonists cannot serve as a replacement for theory.

Another problem with typologies and taxonomies is that they tend to shed important information, such as the cultural context and meaning of acts involving fire-setting, to say nothing of the personal meanings and individual reasons for arson. As a number of theorists and clinicians (e.g., Horley, 2008) have argued, idiographic analysis permits understanding that translates into effective interventions. Swaffer and Hollin (1995) made an interesting attempt to do this with teen-aged arsonists before succumbing to the temptation of grouping their data. We really need to examine individuals' thoughts and feelings more carefully in order to develop more efficacious interventions. Overall, we support calls for more empirical work on a wide range of arson-related issues so long as researchers and clinicians make the effort to conduct more theoretically-informed empirical research. We need to redouble theoretical efforts and not fall back on a blind empirical approach where research replaces theory. Development of new theory, or even rediscover and/or extension of older and established theories can well serve arson investigators as well as therapists who work with fire-setters. We would nominate Kelly's (1955) personal construct theory as one established theory, albeit limited in popularity, that might provide a fertile ground for further research, but no doubt other theories exist as well.

Established terms like pyromania and pyrolagnia, and certainly not more modern terms like pyrophilia, do not appear useful. They serve more to confuse than to clarify when applied to arsonists in the clinic or the court, especially when specialists cannot agree on their meanings and legal implications (Doley, 2003b; Geller, McDermeit, & Brown, 1997). We may need to distinguish between arsonists who are well aware of the nature and outcome of their fire-setting behavior and those who are unaware of their own state of mind and/or are unable to control their own actions. This distinction, however, might be better accomplished with reference to fire fetish or any number of other explanations or descriptive terms rather than chasing ghosts, especially ones that dates back nearly 200 years.

An area that has received some attention recently, especially from Kocsis (2006) and others, is arsonist profiling. While we are less-than-keen on profiling as a whole because of the tendency to rely on sweeping generalization, other researchers would disagree undoubtedly. One specific area that we believe would benefit from more attention is risk assessment. Harris and Rice (1996; Rice & Harris, 1996) threw down the gauntlet concerning research into arsonists' risk factors yet few have responded. Admittedly, Brett (2004) repeated the challenge, and Kolko et al. (e.g., Kolko, Day, Bridge, & Kazdin, 2001) have conducted important predictive studies on fire-setting in youths, but a complete understanding of all static and dynamic predictors of arson, especially cognitive and affective factors, remains to be established.

Although we would agree with many writers over the years that arsonists do comprise an under-studied group, the increase in the quantity and quality of research over the past two decades is making this assertion less tenable. The research on arsonist classification, in particular, has expanded, although much more classification work can and should proceed. We would suggest that classification alone, regardless of refinement, is not sufficient to illuminate arsonists' activities (cf., Doley, 2003a). One limitation of classification research is related to a point above – it sheds the individual richness of data, ignoring the motives of the individual actor in the quest for a general motive, and thereby may miss important idiosyncratic reasons for a

particular fire. Expanding Lewis (1965) ideas, we could suggest that the quest for social power might be behind many of the efforts of young arsonists (see Horley, 2008), although we would not put such an idea forward in a misguided attempt to supplant more complex theory in favor of simple and general explanations. If those who develop and deliver treatment programs for arsonists have any hope of providing more effective programs, and we cannot claim to have at present optimal treatment programs however promising some appear, we need to take individual criminogenic factors and personal pathology into consideration.

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